MES COLLEGE OF ENGINEERING, KUTTIPPURAM
DEPARTMENT OF COMPUTER APPLICATIONS
20MCA245 – MINI PROJECT

PRO FORMA FOR THE APPROVAL OF THE THIRD SEMESTER MINI PROJECT

(Note: All entries of the pro forma for approval should be filled up with appropriate and complete information. Incomplete Pro forma of approval in any respect will be rejected.)

Mini Project Proposal No : *(Filled by the Department)*	Academic Year : 2021-2022 Year of Admission : 2020

1. Title of the Project : Human activity detection from image
2. Name of the Guide : M.S.Febin Aziz
3. Number of the Student: MES20MCA-2050
4. Student Details (in BLOCK LETTERS)

	Name	Signature	Roll Number
1.	SNEHA.K		51

Date:01/12/2021

Approval Status : Approved / Not Approved

Signature of Committee Members

Comments of The Mini Project Guide Dated Signature

Initial Submission :

First Review :

Second Review :

Comments of The Project Coordinator Dated Signature

Initial Submission:

First Review

Second Review

Final Comments :

Dated Signature of HOD

Introduction:

Activity detection is a major problem. It is a fundamental problem in computer vision, i.e. to detect the activity of human in images and videos. These applications need real-time detection performance, but it is generally very time consuming to detect the actual activity. The main objective of this project is the detection of various human activities from an image using simple machine learning algorithms. In my proposed approach, human detection is done prior to action recognition. The process of human detection is realized by computing the correlation of a test region with components obtained from training images of humans in different poses. Gradient-based features are extracted to build different pose correlation masks. A test region is considered to be human if the computed correlation coefficient is maximum among all regions in the image. Once human detections done, skeltonization is applied to extract straight-line estimations of limbs, from which we compute angular changes in a sequence of images. These angular features are used to learn different action classes and a simple Euclidean distance measure is used to classify actions.

Objectives:

The main objective of this work is to capture users image and identify the current action. To realize this goal our method first detects humans in different poses using a correlation-based approach. Recognition of actions is done afterward based on the change of the angular values subtended by various body parts. Real-time human detection and action recognition are very challenging, and most state-of-the-art approaches employ complex feature extraction and classification techniques, which ultimately becomes a handicap for real-time recognition. Our correlation-based method, on the other hand, is computationally efficient and uses very simple gradient-based features. For action recognition angular features of body parts are extracted using a skeleton technique. Results for action recognition are comparable with the present state-of-the-art.

For future iam planning to extend this project for detection of human activities from large surveillance video after compressing.

Problem Definition:

Following are the steps to perform the activity recognition in conjunction with the compression:

Step 1: An image is given as an input

Step 2:Detection of activity using machine learning algorithms

Basic functionalities:

The system is divided into 2 phases: training and deployment. During the training phase, the ResNet model is trained with our custom dataset. We divide the dataset into training and validation sets. Validation set contained 20% of the images which were randomly chosen from the dataset. After the training phase, the model is deployed on computer systems used by the security teams in public places. Our system is a desktop application which can take as input live feed from a camera or an already stored video from the computer. The image is extracted from the video then. This video is then preprocessed (which involves breaking the video into frames) and then fed into the ResNet-50 model. The model outputs the current activity present in the human image in both voice and text method.

Tools / Platform, Hardware and Software Requirements:

Hardware Requirements:

Processor: i3

Hard Disk: 500 GB

RAM: 4 GB

Camera: Laptop camera(HD)

Software Requirements

Language: Python

Front End: Python

Back end: SQlite

Dataset: human action openpose dataset

Algorithm: Openpose

IDE: Visual Studio Code

OS: Windows/Linux